

SEQUENCE LISTING

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<120> BACTERIAL PHEROMONES AND USES THEREFOR

<130> 49946-60261

<140> 09/445,289

<141> 2000-05-11

<150> PCT/GB98/01619

<151> 1998-06-03

<150> GB 9711389.8

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<150> GB 9811221.2

<151> 1998-05-27

<160> 63

<170> PatentIn Ver. 3.3

<210> 1

<211> 362

<212> PRT

<213> Mycobacterium tuberculosis

<400> 1

Met Leu Arg Leu Val Val Gly Ala Leu Leu Leu Val Leu Ala Phe Ala
1 5 10 15

Gly Gly Tyr Ala Val Ala Ala Cys Lys Thr Val Thr Leu Thr Val Asp
20 25 30

Gly Thr Ala Met Arg Val Thr Thr Met Lys Ser Arg Val Ile Asp Ile
35 40 45

Val Glu Glu Asn Gly Phe Ser Val Asp Asp Arg Asp Asp Leu Tyr Pro
50 55 60

Ala Ala Gly Val Gln Val His Asp Ala Asp Thr Ile Val Leu Arg Arg
65 70 75 80

Ser Arg Pro Leu Gln Ile Ser Leu Asp Gly His Asp Ala Lys Gln Val
85 90 95

Trp Thr Thr Ala Ser Thr Val Asp Glu Ala Leu Ala Gln Leu Ala Met
100 105 110

Thr Asp Thr Ala Pro Ala Ala Ala Ser Arg Ala Ser Arg Val Pro Leu
115 120 125

Ser Gly Met Ala Leu Pro Val Val Ser Ala Lys Thr Val Gln Leu Asn
 130 135 140
 Asp Gly Gly Leu Val Arg Thr Val His Leu Pro Ala Pro Asn Val Ala
 145 150 155 160
 Gly Leu Leu Ser Ala Ala Gly Val Pro Leu Leu Gln Ser Asp His Val
 165 170 175
 Val Pro Ala Ala Thr Ala Pro Ile Val Glu Gly Met Gln Ile Gln Val
 180 185 190
 Thr Arg Asn Arg Ile Lys Lys Val Thr Glu Arg Leu Pro Leu Pro Pro
 195 200 205
 Asn Ala Arg Arg Val Glu Asp Pro Glu Met Asn Met Ser Arg Glu Val
 210 215 220
 Val Glu Asp Pro Gly Val Pro Gly Thr Gln Asp Val Thr Phe Ala Val
 225 230 235 240
 Ala Glu Val Asn Gly Val Glu Thr Gly Arg Leu Pro Val Ala Asn Val
 245 250 255
 Val Val Thr Pro Ala His Glu Ala Val Val Arg Val Gly Thr Lys Pro
 260 265 270
 Gly Thr Glu Val Pro Pro Val Ile Asp Gly Ser Ile Trp Asp Ala Ile
 275 280 285
 Ala Gly Cys Glu Ala Gly Gly Asn Trp Ala Ile Asn Thr Gly Asn Gly
 290 295 300
 Tyr Tyr Gly Gly Val Gln Phe Asp Gln Gly Thr Trp Glu Ala Asn Gly
 305 310 315 320
 Gly Leu Arg Tyr Ala Pro Arg Ala Asp Leu Ala Thr Arg Glu Glu Gln
 325 330 335
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 340 345 350
 Pro Val Cys Ala Ala Arg Ala Gly Ala Arg
 355 360

<210> 2
 <211> 188
 <212> PRT
 <213> Mycobacterium tuberculosis

<400> 2
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 1 5 10 15

Leu Lys Asn Ala Arg Thr Thr Leu Ile Ala Ala Ala Ile Ala Gly Thr

Val Ala Glu Arg Val Leu Ala Thr Gln Gly Ser Gly Ala Trp Pro Ala
100 105 110

Cys Gly His Gly Leu Ser Gly Pro Ser Leu Gln Glu Val Leu Pro Ala
115 120 125

Gly Met Gly Ala Pro Trp Ile Asn Gly Ala Pro Ala Pro Leu Ala Pro
130 135 140

Pro Pro Pro Ala Glu Pro Ala Pro Pro Gln Pro Pro Ala Asp Asn Phe
145 150 155 160

Pro Pro Thr Pro Gly Asp Val Pro Ser Pro Leu Ala Arg Pro
165 170

<210> 4
<211> 407
<212> PRT
<213> Mycobacterium tuberculosis

<400> 4
Met Ser Gly Arg His Arg Lys Pro Thr Thr Ser Asn Val Ser Val Ala
1 5 10 15

Lys Ile Ala Phe Thr Gly Ala Val Leu Gly Gly Gly Gly Ile Ala Met
20 25 30

Ala Ala Gln Ala Thr Ala Ala Thr Asp Gly Glu Trp Asp Gln Val Ala
35 40 45

Arg Cys Glu Ser Gly Gly Asn Trp Ser Ile Asn Thr Gly Asn Gly Tyr
50 55 60

Leu Gly Gly Leu Gln Phe Thr Gln Ser Thr Trp Ala Ala His Gly Gly
65 70 75 80

Gly Glu Phe Ala Pro Ser Ala Gln Leu Ala Ser Arg Glu Gln Gln Ile
85 90 95

Ala Val Gly Glu Arg Val Leu Ala Thr Gln Gly Arg Gly Ala Trp Pro
100 105 110

Val Cys Gly Arg Gly Leu Ser Asn Ala Thr Pro Arg Glu Val Leu Pro
115 120 125

Ala Ser Ala Ala Met Asp Ala Pro Leu Asp Ala Ala Ala Val Asn Gly
130 135 140

Glu Pro Ala Pro Leu Ala Pro Pro Pro Ala Asp Pro Ala Pro Pro Val
145 150 155 160

Glu Leu Ala Ala Asn Asp Leu Pro Ala Pro Leu Gly Glu Pro Leu Pro
165 170 175

Ala Ala Pro Ala Asp Pro Ala Pro Pro Ala Asp Leu Ala Pro Pro Ala
180 185 190

Pro Ala Asp Val Ala Pro Pro Val Glu Leu Ala Val Asn Asp Leu Pro
 195 200 205
 Ala Pro Leu Gly Glu Pro Leu Pro Ala Ala Pro Ala Asp Pro Ala Pro
 210 215 220
 Pro Ala Asp Leu Ala Pro Pro Ala Pro Ala Asp Leu Ala Pro Pro Ala
 225 230 235 240
 Pro Ala Asp Leu Ala Pro Pro Ala Pro Ala Asp Leu Ala Pro Pro Val
 245 250 255
 Glu Leu Ala Val Asn Asp Leu Pro Ala Pro Leu Gly Glu Pro Leu Pro
 260 265 270
 Ala Ala Pro Ala Glu Leu Ala Pro Pro Ala Asp Leu Ala Pro Ala Ser
 275 280 285
 Ala Asp Leu Ala Pro Pro Ala Pro Ala Asp Leu Ala Pro Pro Ala Pro
 290 295 300
 Ala Glu Leu Ala Pro Pro Ala Pro Ala Asp Leu Ala Pro Pro Ala Ala
 305 310 315 320
 Val Asn Glu Gln Thr Ala Pro Gly Asp Gln Pro Ala Thr Ala Pro Gly
 325 330 335
 Gly Pro Val Gly Leu Ala Thr Asp Leu Glu Leu Pro Glu Pro Asp Pro
 340 345 350
 Gln Pro Ala Asp Ala Pro Pro Pro Gly Asp Val Thr Glu Ala Pro Ala
 355 360 365
 Glu Thr Pro Gln Val Ser Asn Ile Ala Tyr Thr Lys Lys Leu Trp Gln
 370 375 380
 Ala Ile Arg Ala Gln Asp Val Cys Gly Asn Asp Ala Leu Asp Ser Leu
 385 390 395 400
 Ala Gln Pro Tyr Val Ile Gly
 405

<210> 5

<211> 155

<212> PRT

<213> Mycobacterium leprae

<400> 5

Met Pro Gly Glu Met Leu Asp Val Arg Lys Leu Cys Lys Leu Phe Val
 1 5 10 15

Lys Ser Ala Val Val Ser Gly Ile Val Thr Ala Ser Met Ala Leu Ser
 20 25 30

Thr Ser Thr Gly Met Ala Asn Ala Val Pro Arg Glu Pro Asn Trp Asp

35	40	45
Ala Val Ala Gln Cys Glu Ser Gly Arg Asn Trp Arg Ala Asn Thr Gly		
50	55	60
Asn Gly Phe Tyr Gly Gly Leu Gln Phe Lys Pro Thr Ile Trp Ala Arg		
65	70	75
Tyr Gly Gly Val Gly Asn Pro Ala Gly Ala Ser Arg Glu Gln Gln Ile		
	85	90
Thr Val Ala Asn Arg Val Leu Ala Asp Gln Gly Leu Asp Ala Trp Pro		
	100	105
Lys Cys Gly Ala Ala Ser Asp Leu Pro Ile Thr Leu Trp Ser His Pro		
	115	120
Ala Gln Gly Val Lys Gln Ile Ile Asn Asp Ile Ile Gln Met Gly Asp		
	130	135
Thr Thr Leu Ala Ala Ile Ala Leu Asn Gly Leu		
145	150	155

<210> 6
 <211> 176
 <212> PRT
 <213> Mycobacterium tuberculosis

<400> 6
Met His Pro Leu Pro Ala Asp His Gly Arg Ser Arg Cys Asn Arg His
1 5 10 15
Pro Ile Ser Pro Leu Ser Leu Ile Gly Asn Ile Ser Ala Thr Ser Gly
20 25 30
Asp Met Ser Ser Met Thr Arg Ile Ala Lys Pro Leu Ile Lys Ser Ala
35 40 45
Met Ala Ala Gly Leu Val Thr Ala Ser Met Ser Leu Ser Thr Ala Val
50 55 60
Ala His Ala Gly Pro Ser Pro Asn Trp Asp Ala Val Ala Gln Cys Glu
65 70 75 80
Ser Gly Gly Asn Trp Ala Ala Asn Thr Gly Asn Gly Lys Tyr Gly Gly
85 90 95
Leu Gln Phe Lys Pro Ala Thr Trp Ala Ala Phe Gly Gly Val Gly Asn
100 105 110
Pro Ala Ala Ala Ser Arg Glu Gln Gln Ile Ala Val Ala Asn Arg Val
115 120 125
Leu Ala Glu Gln Gly Leu Asp Ala Trp Pro Thr Cys Gly Ala Ala Ser
130 135 140

Gly Leu Pro Ile Ala Leu Trp Ser Lys Pro Ala Gln Gly Ile Lys Gln
145 150 155 160

Ile Ile Asn Glu Ile Ile Trp Ala Gly Ile Gln Ala Ser Ile Pro Arg
165 170 175

<210> 7

<211> 154

<212> PRT

<213> Mycobacterium tuberculosis

<400> 7

Met Thr Pro Gly Leu Leu Thr Thr Ala Gly Ala Gly Arg Pro Arg Asp
1 5 10 15

Arg Cys Ala Arg Ile Val Cys Thr Val Phe Ile Glu Thr Ala Val Val
20 25 30

Ala Thr Met Phe Val Ala Leu Leu Gly Leu Ser Thr Ile Ser Ser Lys
35 40 45

Ala Asp Asp Ile Asp Trp Asp Ala Ile Ala Gln Cys Glu Ser Gly Gly
50 55 60

Asn Trp Ala Ala Asn Thr Gly Asn Gly Leu Tyr Gly Gly Leu Gln Ile
65 70 75 80

Ser Gln Ala Thr Trp Asp Ser Asn Gly Gly Val Gly Ser Pro Ala Ala
85 90 95

Ala Ser Pro Gln Gln Gln Ile Glu Val Ala Asp Asn Ile Met Lys Thr
100 105 110

Gln Gly Pro Gly Ala Trp Pro Lys Cys Ser Ser Cys Ser Gln Gly Asp
115 120 125

Ala Pro Leu Gly Ser Leu Thr His Ile Leu Thr Phe Leu Ala Ala Glu
130 135 140

Thr Gly Gly Cys Ser Gly Ser Arg Asp Asp
145 150

<210> 8

<211> 99

<212> PRT

<213> Streptomyces coelicolor

<400> 8

Ile Arg Thr Ala Ala Val Thr Leu Val Ala Ala Thr Ala Leu Gly Ala
1 5 10 15

Thr Gly Glu Ala Val Ala Ala Pro Ser Ala Pro Leu Arg Thr Asp Trp

	20		25		30										
Asp	Ala	Ile	Ala	Ala	Cys	Glu	Ser	Ser	Gly	Asn	Trp	Gln	Ala	Asn	Thr
	35						40					45			
Gly	Asn	Gly	Tyr	Tyr	Gly	Gly	Leu	Gln	Phe	Ala	Arg	Ser	Ser	Trp	Ile
	50					55					60				
Ala	Ala	Gly	Gly	Leu	Lys	Tyr	Ala	Pro	Arg	Ala	Asp	Leu	Ala	Thr	Arg
65					70					75					80
Gly	Glu	Gln	Ile	Ala	Val	Ala	Glu	Arg	Leu	Ala	Arg	Leu	Gln	Gly	Met
			85						90					95	

Ser Ala Trp

<210> 9
 <211> 438
 <212> PRT
 <213> Bacillus subtilis

<400> 9
Met Gly Glu Arg Glu Gly Arg Val Asp Ser Leu Leu Asp Thr Leu Tyr
1 5 10 15
Asn Leu Ser Glu Glu Lys Glu Ala Phe Phe Ile Thr Gln Lys Met Lys
20 25 30
Lys Leu Phe Ser Val Lys Leu Ser Lys Ser Lys Val Ile Leu Val Ala
35 40 45
Ala Cys Leu Leu Leu Ala Gly Ser Gly Thr Ala Tyr Ala Ala His Glu
50 55 60
Leu Thr Lys Gln Ser Val Ser Val Ser Ile Asn Gly Lys Lys Lys His
65 70 75 80
Ile Arg Thr His Ala Asn Thr Val Gly Asp Leu Leu Glu Thr Leu Asp
85 90 95
Ile Lys Thr Arg Asp Glu Asp Lys Ile Thr Pro Ala Lys Gln Thr Lys
100 105 110
Ile Thr Ala Asp Met Asp Val Val Tyr Glu Ala Ala Lys Pro Val Lys
115 120 125
Leu Thr Ile Asn Gly Glu Glu Lys Thr Leu Trp Ser Thr Ala Lys Thr
130 135 140
Val Gly Ala Leu Leu Asp Glu Gln Asp Val Asp Val Lys Glu Gln Asp
145 150 155 160
Gln Ile Asp Pro Ala Ile Asp Thr Asp Ile Ser Lys Asp Met Lys Ile
165 170 175

Asn Ile Glu Pro Ala Phe Gln Val Thr Val Asn Asp Ala Gly Lys Gln
 180 185 190
 Lys Lys Ile Trp Thr Thr Ser Thr Thr Val Ala Asp Phe Leu Lys Gln
 195 200 205
 Gln Lys Met Asn Ile Lys Asp Glu Asp Lys Ile Lys Pro Ala Leu Asp
 210 215 220
 Ala Lys Leu Thr Lys Gly Lys Ala Asp Ile Thr Ile Thr Arg Ile Glu
 225 230 235 240
 Lys Val Thr Asp Val Val Glu Glu Lys Ile Ala Phe Asp Val Lys Lys
 245 250 255
 Gln Glu Asp Ala Ser Leu Glu Lys Gly Lys Glu Lys Val Val Gln Lys
 260 265 270
 Gly Lys Glu Gly Lys Leu Lys Lys His Phe Glu Val Val Lys Glu Asn
 275 280 285
 Gly Lys Glu Val Ser Arg Glu Leu Val Lys Glu Glu Thr Ala Glu Gln
 290 295 300
 Ser Lys Asp Lys Val Ile Ala Val Gly Thr Lys Gln Ser Ser Pro Lys
 305 310 315 320
 Phe Glu Thr Val Ser Ala Ser Gly Asp Ser Lys Thr Val Val Ser Arg
 325 330 335
 Ser Asn Glu Ser Thr Gly Lys Val Met Thr Val Ser Ser Thr Ala Tyr
 340 345 350
 Thr Ala Ser Cys Ser Gly Cys Ser Gly His Thr Ala Thr Gly Val Asn
 355 360 365
 Leu Lys Asn Asn Pro Asn Ala Lys Val Ile Ala Val Asp Pro Asn Val
 370 375 380
 Ile Pro Leu Gly Ser Lys Val His Val Glu Gly Tyr Gly Tyr Ala Ile
 385 390 395 400
 Ile Ala Ala Asp Thr Gly Ser Ala Ile Lys Gly Asn Lys Ile Asp Val
 405 410 415
 Phe Phe Pro Ser Lys Ser Asp Ala Ser Asn Trp Gly Val Lys Thr Val
 420 425 430
 Ser Val Lys Val Leu Asn
 435

<210> 10

<211> 288

<212> PRT

<213> Bacillus subtilis

<400> 10

Met Lys Lys Thr Ile Met Ser Phe Val Ala Val Ala Ala Leu Ser Thr
1 5 10 15

Thr Ala Phe Gly Ala His Ala Ser Ala Lys Glu Ile Thr Val Gln Lys
20 25 30

Gly Asp Thr Leu Trp Gly Ile Ser Gln Lys Asn Gly Val Asn Leu Lys
35 40 45

Asp Leu Lys Glu Trp Asn Lys Leu Thr Ser Asp Lys Ile Ile Ala Gly
50 55 60

Glu Lys Leu Thr Ile Ser Ser Glu Glu Thr Thr Thr Thr Gly Gln Tyr
65 70 75 80

Thr Ile Lys Ala Gly Asp Thr Leu Ser Lys Ile Ala Gln Lys Phe Gly
85 90 95

Thr Thr Val Asn Asn Leu Lys Val Trp Asn Asn Leu Ser Ser Asp Met
100 105 110

Ile Tyr Ala Gly Ser Thr Leu Ser Val Lys Gly Gln Ala Thr Ala Ala
115 120 125

Asn Thr Ala Thr Glu Asn Ala Gln Thr Asn Ala Pro Gln Ala Ala Pro
130 135 140

Lys Gln Glu Ala Val Gln Lys Glu Gln Pro Lys Gln Glu Ala Val Gln
145 150 155 160

Gln Gln Pro Lys Gln Glu Thr Lys Ala Glu Ala Glu Thr Ser Val Asn
165 170 175

Thr Glu Glu Lys Ala Val Gln Ser Asn Thr Asn Asn Gln Glu Ala Ser
180 185 190

Lys Glu Leu Thr Val Thr Ala Thr Ala Tyr Thr Ala Asn Asp Gly Gly
195 200 205

Ile Ser Gly Val Thr Ala Thr Gly Ile Asp Leu Asn Lys Asn Pro Asn
210 215 220

Ala Lys Val Ile Ala Val Asp Pro Asn Val Ile Pro Leu Gly Ser Lys
225 230 235 240

Val Tyr Val Glu Gly Tyr Gly Glu Ala Thr Thr Ala Ala Asp Thr Gly
245 250 255

Gly Ala Ile Lys Gly Asn Lys Ile Asp Val Phe Val Pro Glu Lys Ser
260 265 270

Ser Ala Tyr Arg Trp Gly Asn Lys Thr Val Lys Ile Lys Ile Leu Asn
275 280 285

<210> 11
<211> 320
<212> PRT
<213> Clostridium acetobutylicum

<220>
<221> MOD_RES
<222> (2)..(3)
<223> Variable amino acid

<400> 11

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Ile	Ser	Ser	Met	Lys	Lys	Asn	Ile	Thr	Val	Asn	Ile	Asp	Gly	Lys	Thr
			20					25					30		
Ser	Lys	Ile	Ile	Thr	Tyr	Lys	Ser	Asn	Glu	Gly	Ser	Ile	Leu	Ser	Lys
		35					40					45			
Asn	Asn	Ile	Leu	Val	Gly	Pro	Lys	Asp	Lys	Ile	Gln	Pro	Ala	Leu	Asp
	50					55					60				
Thr	Asn	Leu	Lys	Asn	Gly	Asp	Lys	Ile	Tyr	Ile	Lys	Lys	Ala	Ile	Ser
	65				70					75					80
Val	Glu	Val	Ala	Val	Asp	Gly	Lys	Val	Arg	Arg	Val	Lys	Ser	Ser	Glu
				85					90						95
Glu	Thr	Val	Ser	Lys	Met	Leu	Lys	Ala	Glu	Lys	Ile	Pro	Leu	Ser	Lys
			100					105					110		
Val	Asp	Lys	Val	Asn	Ile	Ser	Arg	Asn	Ala	Ala	Ile	Lys	Lys	Asn	Met
		115					120					125			
Lys	Ile	Ser	Ile	Thr	Arg	Val	Asn	Ser	Gln	Ile	Thr	Lys	Glu	Asn	Gln
	130					135					140				
Gln	Val	Asp	Phe	Pro	Thr	Glu	Val	Ile	Ser	Asp	Asp	Ser	Met	Gly	Asn
	145				150					155					160
Asp	Glu	Lys	Gln	Val	Ile	Gln	Gln	Gly	Gln	Ala	Gly	Glu	Lys	Glu	Val
			165					170						175	
Phe	Thr	Lys	Ile	Val	Tyr	Glu	Asp	Gly	Lys	Ala	Val	Ser	Lys	Glu	Ile
			180					185					190		
Val	Gly	Glu	Val	Ile	Lys	Lys	Glu	Pro	Thr	Lys	Gln	Val	Phe	Lys	Val
		195					200					205			
Gly	Thr	Leu	Gly	Val	Leu	Lys	Pro	Asp	Arg	Gly	Gly	Arg	Val	Leu	Tyr
	210					215					220				
Lys	Lys	Ser	Leu	Gln	Val	Leu	Ala	Thr	Ala	Tyr	Thr	Asp	Asp	Phe	Ser
	225				230					235					240

Phe Gly Ile Thr Ala Ser Gly Thr Lys Val Lys Arg Asp Ser Asp Gly
 245 250 255
 Tyr Ser Ser Ile Ala Val Asp Pro Thr Val Ile Pro Leu Gly Thr Lys
 260 265 270
 Leu Tyr Val Pro Gly Tyr Gly Tyr Gly Val Val Ala Glu Asp Thr Gly
 275 280 285
 Gly Ala Ile Lys Gly Asn Arg Leu Asp Leu Phe Phe Thr Ser Glu Arg
 290 295 300
 Glu Cys Tyr Asp Trp Gly Ala Lys Asn Val Thr Val Tyr Ile Leu Lys
 305 310 315 320

<210> 12
 <211> 81
 <212> PRT
 <213> Clostridium perfringens

<400> 12
 Ala Glu Ala Tyr Thr Ala Ser Gly Met His Val Leu Arg Asp Pro Asn
 1 5 10 15
 Gly Tyr Ser Thr Ile Ala Val Asp Pro Ser Val Ile Pro Leu Gly Thr
 20 25 30
 Lys Leu Tyr Val Glu Gly Tyr Gly Tyr Ala Ile Ile Ala Ala Asp Thr
 35 40 45
 Gly Gly Ala Ile Lys Gly Asn Arg Val Asp Leu Phe Phe Asn Thr Glu
 50 55 60
 Ala Glu Ala Ser Asn Trp Gly Val Arg Asn Leu Asp Val Tyr Ile Leu
 65 70 75 80

Asn

<210> 13
 <211> 51
 <212> PRT
 <213> Unknown Organism

<220>
 <223> Description of Unknown Organism: RP-factor
 C-terminal domain peptide

<400> 13
 Thr Ile Val Val Lys Ser Gly Asp Ser Leu Trp Thr Leu Ala Asn Glu
 1 5 10 15

Tyr Glu Val Glu Gly Gly Trp Thr Ala Leu Tyr Glu Ala Asn Lys Gly
20 25 30

Ala Val Ser Asp Ala Ala Val Ile Tyr Val Gly Gln Glu Leu Val Leu
35 40 45

Pro Gln Ala
50

<210> 14

<211> 46

<212> PRT

<213> Unknown Organism

<220>

<223> Description of Unknown Organism: Hypothetical
wall-associated protein fragment

<400> 14

Thr Ile Lys Val Lys Ser Gly Asp Ser Leu Trp Lys Leu Ser Arg Gln
1 5 10 15

Tyr Asp Thr Thr Ile Ser Ala Leu Lys Ser Glu Asn Lys Leu Lys Ser
20 25 30

Thr Val Leu Tyr Val Gly Gln Ser Leu Lys Val Pro Glu Ser
35 40 45

<210> 15

<211> 44

<212> PRT

<213> Unknown Organism

<220>

<223> Description of Unknown Organism: Hypothetical
wall-associated protein fragment

<400> 15

Thr Ile Lys Val Lys Ser Gly Asp Ser Leu Trp Lys Leu Ala Gln Thr
1 5 10 15

Tyr Asn Thr Ser Val Ala Ala Leu Thr Ser Ala Asn His Leu Ser Thr
20 25 30

Thr Val Leu Ser Ile Gly Gln Thr Leu Thr Ile Pro
35 40

<210> 16

<211> 43

<212> PRT

<213> Unknown Organism

<220>

<223> Description of Unknown Organism: Hypothetical
wall-associated protein fragment

<400> 16

Thr Tyr Thr Val Lys Ser Gly Asp Ser Leu Trp Val Ile Ala Gln Lys
1 5 10 15

Phe Asn Val Thr Ala Gln Gln Ile Arg Glu Lys Asn Asn Leu Lys Thr
20 25 30

Asp Val Leu Gln Val Gly Gln Lys Leu Val Ile
35 40

<210> 17

<211> 43

<212> PRT

<213> Unknown Organism

<220>

<223> Description of Unknown Organism: Hypothetical
wall-associated protein fragment

<400> 17

Lys Tyr Thr Val Lys Ser Gly Asp Ser Leu Trp Lys Ile Ala Asn Asn
1 5 10 15

Ile Asn Leu Thr Val Gln Gln Ile Arg Asn Ile Asn Asn Leu Lys Ser
20 25 30

Asp Val Leu Tyr Val Gly Gln Val Leu Lys Leu
35 40

<210> 18

<211> 45

<212> PRT

<213> Unknown Organism

<220>

<223> Description of Unknown Organism: Hypothetical
wall-associated protein fragment

<400> 18

Thr Tyr Thr Val Lys Ser Gly Asp Thr Ile Trp Ala Leu Ser Ser Lys
1 5 10 15

Tyr Gly Thr Ser Val Gln Asn Ile Met Ser Trp Asn Asn Leu Ser Ser
20 25 30

Ser Ser Ile Tyr Val Gly Gln Val Leu Ala Val Lys Gln
35 40 45

<210> 19

<211> 45

<212> PRT

<213> Unknown Organism

<220>

<223> Description of Unknown Organism: Hypothetical
wall-associated protein fragment

<400> 19

Thr His Ala Val Lys Ser Gly Asp Thr Ile Trp Ala Leu Ser Val Lys
1 5 10 15

Tyr Gly Val Ser Val Gln Asp Ile Met Ser Trp Asn Asn Leu Ser Ser
20 25 30

Ser Ser Ile Tyr Val Gly Gln Lys Leu Ala Ile Lys Gln
35 40 45

<210> 20

<211> 46

<212> PRT

<213> Unknown Organism

<220>

<223> Description of Unknown Organism: Hypothetical
wall-associated protein fragment

<400> 20

Ser Val Lys Val Lys Ser Gly Asp Thr Leu Trp Ala Leu Ser Val Lys
1 5 10 15

Tyr Lys Thr Ser Ile Ala Gln Leu Lys Ser Trp Asn His Leu Ser Ser
20 25 30

Asp Thr Ile Tyr Ile Gly Gln Asn Leu Ile Val Ser Gln Ser
35 40 45

<210> 21

<211> 43

<212> PRT

<213> Unknown Organism

<220>

<223> Description of Unknown Organism: Hypothetical
wall-associated protein fragment

<400> 21

Thr Tyr Thr Val Lys Ser Gly Asp Thr Leu Trp Gly Ile Ser Gln Arg
1 5 10 15

Tyr Gly Ile Ser Val Ala Gln Ile Gln Ser Ala Asn Asn Leu Lys Ser
20 25 30

Thr Ile Ile Tyr Ile Gly Gln Lys Leu Leu Leu
35 40

<210> 22
<211> 60
<212> PRT
<213> Unknown Organism

<220>
<223> Description of Unknown Organism: Hypothetical
wall-associated protein fragment

<400> 22
Thr Tyr Thr Val Lys Lys Gly Asp Thr Leu Trp Asp Ile Ala Gly Arg
1 5 10 15
Phe Tyr Gly Asn Ser Thr Gln Trp Arg Lys Ile Trp Asn Ala Asn Lys
20 25 30
Thr Ala Met Ile Lys Arg Ser Lys Arg Asn Ile Arg Gln Pro Gly His
35 40 45
Trp Ile Phe Pro Gly Gln Lys Leu Lys Ile Pro Gln
50 55 60

<210> 23
<211> 60
<212> PRT
<213> Unknown Organism

<220>
<223> Description of Unknown Organism: Hypothetical
wall-associated protein fragment

<400> 23
Thr Tyr Thr Val Lys Lys Gly Asp Thr Leu Trp Asp Leu Ala Gly Lys
1 5 10 15
Phe Tyr Gly Asp Ser Thr Lys Trp Arg Lys Ile Trp Lys Val Asn Lys
20 25 30
Lys Ala Met Ile Lys Arg Ser Lys Arg Asn Ile Arg Gln Pro Gly His
35 40 45
Trp Ile Phe Pro Gly Gln Lys Leu Lys Ile Pro Gln
50 55 60

<210> 24
<211> 167
<212> PRT
<213> Mycobacterium tuberculosis

<400> 24
Ala Pro Pro Val Glu Leu Ala Ala Asn Asp Leu Pro Ala Pro Leu Gly
1 5 10 15
Glu Pro Leu Pro Ala Ala Pro Ala Asp Pro Ala Pro Pro Ala Asp Leu
20 25 30

Ala Pro Pro Ala Pro Ala Asp Val Ala Pro Pro Val Glu Leu Ala Val
35 40 45

Asn Asp Leu Pro Ala Pro Leu Gly Glu Pro Leu Pro Ala Ala Pro Ala
50 55 60

Asp Pro Ala Pro Pro Ala Asp Leu Ala Pro Pro Ala Pro Ala Asp Leu
65 70 75 80

Ala Pro Pro Ala Pro Ala Asp Leu Ala Pro Pro Ala Pro Ala Asp Leu
85 90 95

Ala Pro Pro Val Glu Leu Ala Val Asn Asp Leu Pro Ala Pro Leu Gly
100 105 110

Glu Pro Leu Pro Ala Ala Pro Ala Glu Leu Ala Pro Pro Ala Asp Leu
115 120 125

Ala Pro Ala Ser Ala Asp Leu Ala Pro Pro Ala Pro Ala Asp Leu Ala
130 135 140

Pro Pro Ala Pro Ala Glu Leu Ala Pro Pro Ala Pro Ala Asp Leu Ala
145 150 155 160

Pro Pro Ala Ala Val Asn Glu
165

<210> 25
<211> 11
<212> PRT
<213> Mycobacterium tuberculosis

<400> 25
Ala Pro Pro Val Glu Leu Ala Ala Asn Asp Leu
1 5 10

<210> 26
<211> 11
<212> PRT
<213> Mycobacterium tuberculosis

<400> 26
Ala Pro Pro Val Glu Leu Ala Val Asn Asp Leu
1 5 10

<210> 27
<211> 15
<212> PRT
<213> Mycobacterium tuberculosis

<400> 27
Pro Ala Pro Leu Gly Glu Pro Leu Pro Ala Ala Pro Ala Glu Leu
1 5 10 15

<210> 28
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<213> Mycobacterium tuberculosis

<400> 28
Pro Ala Pro Leu Gly Glu Pro Leu Pro Ala Ala Pro Ala Glu Leu
1 5 10 15

<210> 29
<211> 7
<212> PRT
<213> Mycobacterium tuberculosis

<400> 29
Pro Ala Pro Pro Ala Asp Leu
1 5

<210> 30
<211> 8
<212> PRT
<213> Mycobacterium tuberculosis

<400> 30
Ala Pro Pro Ala Pro Ala Asp Leu
1 5

<210> 31
<211> 8
<212> PRT
<213> Mycobacterium tuberculosis

<400> 31
Ala Pro Pro Ala Pro Ala Asp Val
1 5

<210> 32
<211> 8
<212> PRT
<213> Mycobacterium tuberculosis

<400> 32
Ala Pro Pro Ala Pro Ala Glu Leu
1 5

<210> 33
<211> 8
<212> PRT
<213> Mycobacterium tuberculosis

<400> 33

Ala Pro Pro Ala Pro Ala Glu Val

1

5

<210> 34

<211> 478

<212> PRT

<213> *Listeria monocytogenes*

<400> 34

Met Asn Met Lys Lys Ala Thr Ile Ala Ala Thr Ala Gly Ile Ala Val

1

5

10

15

Thr Ala Phe Ala Ala Pro Thr Ile Ala Ser Ala Ser Thr Val Val Val

20

25

30

Glu Ala Gly Asp Thr Leu Trp Gly Ile Ala Gln Ser Lys Gly Thr Thr

35

40

45

Val Asp Ala Ile Lys Lys Ala Asn Asn Leu Thr Thr Asp Lys Ile Val

50

55

60

Pro Gly Gln Lys Leu Gln Val Asn Asn Glu Val Ala Ala Ala Glu Lys

65

70

75

80

Thr Glu Lys Ser Val Ser Ala Thr Trp Leu Asn Val Arg Thr Gly Ala

85

90

95

Gly Val Asp Asn Ser Ile Ile Thr Ser Ile Lys Gly Gly Thr Lys Val

100

105

110

Thr Val Glu Thr Thr Glu Ser Asn Gly Trp His Lys Ile Thr Tyr Asn

115

120

125

Asp Gly Lys Thr Gly Phe Val Asn Gly Lys Tyr Leu Thr Asp Lys Ala

130

135

140

Val Ser Thr Pro Val Ala Pro Thr Gln Glu Val Lys Lys Glu Thr Thr

145

150

155

160

Thr Gln Gln Ala Ala Pro Val Ala Glu Thr Lys Thr Glu Val Lys Gln

165

170

175

Thr Thr Gln Ala Thr Thr Pro Ala Pro Lys Val Ala Glu Thr Lys Glu

180

185

190

Thr Pro Val Ile Asp Gln Asn Ala Thr Thr His Ala Val Lys Ser Gly

195

200

205

Asp Thr Ile Trp Ala Leu Ser Val Lys Tyr Gly Val Ser Val Gln Asp

210

215

220

Ile Met Ser Trp Asn Asn Leu Ser Ser Ser Ser Ile Tyr Val Gly Gln

225

230

235

240

Lys Leu Ala Ile Lys Gln Thr Ala Asn Thr Ala Thr Pro Lys Ala Glu

245										250										255									
Val	Lys	Thr	Glu	Ala	Pro	Ala	Ala	Glu	Lys	Gln	Ala	Ala	Pro	Val	Val														
			260					265					270																
Lys	Glu	Asn	Thr	Asn	Thr	Asn	Thr	Ala	Thr	Thr	Glu	Lys	Lys	Glu	Thr														
		275					280					285																	
Ala	Thr	Gln	Gln	Gln	Thr	Ala	Pro	Lys	Ala	Pro	Thr	Glu	Ala	Ala	Lys														
		290				295					300																		
Pro	Ala	Pro	Ala	Pro	Ser	Thr	Asn	Thr	Asn	Ala	Asn	Lys	Thr	Asn	Thr														
305					310				315					320															
Asn	Thr	Asn	Thr	Asn	Asn	Thr	Asn	Thr	Pro	Ser	Lys	Asn	Thr	Asn	Thr														
				325				330						335															
Asn	Ser	Asn	Thr	Asn	Thr	Asn	Thr	Asn	Ser	Asn	Thr	Asn	Ala	Asn	Gln														
			340				345						350																
Gly	Ser	Ser	Asn	Asn	Asn	Ser	Asn	Ser	Ser	Ala	Ser	Ala	Ile	Ile	Ala														
		355				360						365																	
Glu	Ala	Gln	Lys	His	Leu	Gly	Lys	Ala	Tyr	Ser	Trp	Gly	Gly	Asn	Gly														
		370				375					380																		
Pro	Thr	Thr	Phe	Asp	Cys	Ser	Gly	Tyr	Thr	Lys	Tyr	Val	Phe	Ala	Lys														
385				390				395						400															
Ala	Gly	Ile	Ser	Leu	Pro	Arg	Thr	Ser	Gly	Ala	Gln	Tyr	Ala	Ser	Thr														
				405				410						415															
Thr	Arg	Ile	Ser	Glu	Ser	Gln	Ala	Lys	Pro	Gly	Asp	Leu	Val	Phe	Phe														
			420					425				430																	
Asp	Tyr	Gly	Ser	Gly	Ile	Ser	His	Val	Gly	Ile	Tyr	Val	Gly	Asn	Gly														
		435				440					445																		
Gln	Met	Ile	Asn	Ala	Gln	Asp	Asn	Gly	Val	Lys	Tyr	Asp	Asn	Ile	His														
		450				455					460																		
Gly	Ser	Gly	Trp	Gly	Lys	Tyr	Leu	Val	Gly	Phe	Gly	Arg	Val																
465					470				475																				

<210> 35
 <211> 758
 <212> DNA
 <213> Micrococcus luteus

<220>
 <221> CDS
 <222> (66)..(728)

<400> 35
 accaaggaga aggacgaccc cgggtgtgcct cggccgccga tcagcgagga ctgcgcatgg 60

acacc atg act ctc ttc acc act tcc gcc acc cgc tcc cgc cgt gcc acc	110
Met Thr Leu Phe Thr Ser Ala Thr Arg Ser Arg Arg Ala Thr	
1 5 10 15	
gcc tcg atc gtc gcg ggc atg acc ctc gcc ggc gcc gcc gcc gtg ggc	158
Ala Ser Ile Val Ala Gly Met Thr Leu Ala Gly Ala Ala Ala Val Gly	
20 25 30	
ttc tcc gcc ccg gcc cag gcc gcc acc gtg gac acc tgg gac cgc ctc	206
Phe Ser Ala Pro Ala Gln Ala Ala Thr Val Asp Thr Trp Asp Arg Leu	
35 40 45	
gcc gag tgc gag tcc aac ggc acc tgg gac atc aac acc ggc aac ggc	254
Ala Glu Cys Glu Ser Asn Gly Thr Trp Asp Ile Asn Thr Gly Asn Gly	
50 55 60	
ttc tac ggc ggc gtg cag ttc acc ctg tcc tcc tgg cag gcc gtc ggc	302
Phe Tyr Gly Gly Val Gln Phe Thr Leu Ser Ser Trp Gln Ala Val Gly	
65 70 75	
ggc gaa ggc tac ccg cac cag gcc tcg aag gcc gag cag atc aag cgc	350
Gly Glu Gly Tyr Pro His Gln Ala Ser Lys Ala Glu Gln Ile Lys Arg	
80 85 90 95	
gcc gag atc ctc cag gac ctg cag gcc tgg ggc gcg tgg ccg ctg tgc	398
Ala Glu Ile Leu Gln Asp Leu Gln Gly Trp Gly Ala Trp Pro Leu Cys	
100 105 110	
tcg cag aag ctg ggc ctg acc cag gct gac gcg gac gcc ggt gac gtg	446
Ser Gln Lys Leu Gly Leu Thr Gln Ala Asp Ala Asp Ala Gly Asp Val	
115 120 125	
gac gcc acc gag gcc gcc ccg gtc gcc gtg gag cgc acg gcc acc gtg	494
Asp Ala Thr Glu Ala Ala Pro Val Ala Val Glu Arg Thr Ala Thr Val	
130 135 140	
cag cgc cag tcc gcc gcg gac gag gct gcc gcc gag cag gcc gct gcc	542
Gln Arg Gln Ser Ala Ala Asp Glu Ala Ala Ala Glu Gln Ala Ala Ala	
145 150 155	
gcg gag cag gcc gtc gtc gcc gag gcc gag acc atc gtc gtc aag tcc	590
Ala Glu Gln Ala Val Val Ala Glu Ala Glu Thr Ile Val Val Lys Ser	
160 165 170 175	
ggt gac tcc ctc tgg acg ctc gcc aac gag tac gag gtg gag ggt ggc	638
Gly Asp Ser Leu Trp Thr Leu Ala Asn Glu Tyr Glu Val Glu Gly Gly	
180 185 190	
tgg acc gcc ctc tac gag gcc aac aag ggc gcc gtc tcc gac gcc gcc	686
Trp Thr Ala Leu Tyr Glu Ala Asn Lys Gly Ala Val Ser Asp Ala Ala	
195 200 205	
gtg atc tac gtc ggc cag gag ctc gtc ctg ccg cag gcc tga	728
Val Ile Tyr Val Gly Gln Glu Leu Val Leu Pro Gln Ala	
210 215 220	
gacgcctgac cggccccccg gaccggtacc	758

<210> 36
<211> 220
<212> PRT
<213> Micrococcus luteus

<400> 36
Met Thr Leu Phe Thr Thr Ser Ala Thr Arg Ser Arg Arg Ala Thr Ala
1 5 10 15
Ser Ile Val Ala Gly Met Thr Leu Ala Gly Ala Ala Ala Val Gly Phe
20 25 30
Ser Ala Pro Ala Gln Ala Ala Thr Val Asp Thr Trp Asp Arg Leu Ala
35 40 45
Glu Cys Glu Ser Asn Gly Thr Trp Asp Ile Asn Thr Gly Asn Gly Phe
50 55 60
Tyr Gly Gly Val Gln Phe Thr Leu Ser Ser Trp Gln Ala Val Gly Gly
65 70 75 80
Glu Gly Tyr Pro His Gln Ala Ser Lys Ala Glu Gln Ile Lys Arg Ala
85 90 95
Glu Ile Leu Gln Asp Leu Gln Gly Trp Gly Ala Trp Pro Leu Cys Ser
100 105 110
Gln Lys Leu Gly Leu Thr Gln Ala Asp Ala Asp Ala Gly Asp Val Asp
115 120 125
Ala Thr Glu Ala Ala Pro Val Ala Val Glu Arg Thr Ala Thr Val Gln
130 135 140
Arg Gln Ser Ala Ala Asp Glu Ala Ala Ala Glu Gln Ala Ala Ala Ala
145 150 155 160
Glu Gln Ala Val Val Ala Glu Ala Glu Thr Ile Val Val Lys Ser Gly
165 170 175
Asp Ser Leu Trp Thr Leu Ala Asn Glu Tyr Glu Val Glu Gly Gly Trp
180 185 190
Thr Ala Leu Tyr Glu Ala Asn Lys Gly Ala Val Ser Asp Ala Ala Val
195 200 205
Ile Tyr Val Gly Gln Glu Leu Val Leu Pro Gln Ala
210 215 220

<210> 37
<211> 33
<212> DNA
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 37

gcsacsgtsg acacstggga ccgsctsgcs gag

33

<210> 38

<211> 19

<212> PRT

<213> Micrococcus luteus

<220>

<221> MOD_RES

<222> (13)

<223> Variable amino acid

<220>

<221> MOD_RES

<222> (18)

<223> Variable amino acid

<400> 38

Ala	Thr	Val	Asp	Thr	Trp	Asp	Arg	Leu	Ala	Glu	Glu	Xaa	Ser	Asn	Gly
1				5				10						15	

Thr Xaa Asp

<210> 39

<211> 18

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 39

ccgccgtaga agccgttg

18

<210> 40

<211> 19

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 40

agttcaccct gtcctcctg

19

<210> 41
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<220>
<221> modified_base
<222> (9)
<223> i

<220>
<221> modified_base
<222> (15)
<223> i

<220>
<221> modified_base
<222> (21)
<223> i

<400> 41
gcytgrtgng grtanccytc ncc

23

<210> 42
<211> 12
<212> PRT
<213> Micrococcus luteus

<400> 42
Val Gly Gly Glu Gly Tyr Pro His Gln Ala Ser Lys
1 5 10

<210> 43
<211> 182
<212> PRT
<213> Micrococcus luteus

<400> 43
Ala Thr Val Asp Thr Trp Asp Arg Leu Ala Glu Cys Glu Ser Asn Gly
1 5 10 15

Thr Trp Asp Ile Asn Thr Gly Asn Gly Phe Tyr Gly Gly Val Gln Phe
20 25 30

Thr Leu Ser Ser Trp Gln Ala Val Gly Gly Glu Gly Tyr Pro His Gln
35 40 45

Ala Ser Lys Ala Glu Gln Ile Lys Arg Ala Glu Ile Leu Gln Asp Leu
50 55 60

Gln Gly Trp Gly Ala Trp Pro Leu Cys Ser Gln Lys Leu Gly Leu Thr
 65 70 75 80
 Gln Ala Asp Ala Asp Ala Gly Asp Val Asp Ala Thr Glu Ala Ala Pro
 85 90 95
 Val Ala Val Glu Arg Thr Ala Thr Val Gln Arg Gln Ser Ala Ala Asp
 100 105 110
 Glu Ala Ala Ala Glu Gln Ala Ala Ala Glu Gln Ala Val Val Ala
 115 120 125
 Glu Ala Glu Thr Ile Val Val Lys Ser Gly Asp Ser Leu Trp Thr Leu
 130 135 140
 Ala Asn Glu Tyr Glu Val Glu Gly Gly Trp Thr Ala Leu Tyr Glu Ala
 145 150 155 160
 Asn Lys Gly Ala Val Ser Asp Ala Ala Val Ile Tyr Val Gly Gln Glu
 165 170 175
 Leu Val Leu Pro Gln Ala
 180

<210> 44
 <211> 299
 <212> DNA
 <213> Streptomyces coelicolor

<220>
 <221> CDS
 <222> (3)..(299)

<400> 44
 gg atc cgc acc gcc gcg gta acc ctg gtc gcc gcg acc gca ctc ggg 47
 Ile Arg Thr Ala Ala Val Thr Leu Val Ala Ala Thr Ala Leu Gly
 1 5 10 15
 gcg acc ggc gaa gcg gtg gcc gcg ccc tcg gcg ccc ctg cgc acc gac 95
 Ala Thr Gly Glu Ala Val Ala Ala Pro Ser Ala Pro Leu Arg Thr Asp
 20 25 30
 tgg gac gcc atc gcc gcg tgc gag tcc agc ggc aac tgg cag gcg aac 143
 Trp Asp Ala Ile Ala Ala Cys Glu Ser Ser Gly Asn Trp Gln Ala Asn
 35 40 45
 acc ggc aac ggc tac tac ggc ggc ctg cag ttc gca cgg tcc agc tgg 191
 Thr Gly Asn Gly Tyr Tyr Gly Gly Leu Gln Phe Ala Arg Ser Ser Trp
 50 55 60
 atc gcc gcc ggc ggc ctc aag tac gcc cgc gcg gac ctc gcc acc 239
 Ile Ala Ala Gly Gly Leu Lys Tyr Ala Pro Arg Ala Asp Leu Ala Thr
 65 70 75
 cgc ggc gag cag atc gcc gtg gcg gaa cgc ctc gcc cgt ctg cag ggg 287
 Arg Gly Glu Gln Ile Ala Val Ala Glu Arg Leu Ala Arg Leu Gln Gly

80 85 90 95
 atg tcc gcc tgg 299
 Met Ser Ala Trp

<210> 45
 <211> 99
 <212> PRT
 <213> Streptomyces coelicolor

<400> 45
 Ile Arg Thr Ala Ala Val Thr Leu Val Ala Ala Thr Ala Leu Gly Ala
 1 5 10 15
 Thr Gly Glu Ala Val Ala Ala Pro Ser Ala Pro Leu Arg Thr Asp Trp
 20 25 30
 Asp Ala Ile Ala Ala Cys Glu Ser Ser Gly Asn Trp Gln Ala Asn Thr
 35 40 45
 Gly Asn Gly Tyr Tyr Gly Gly Leu Gln Phe Ala Arg Ser Ser Trp Ile
 50 55 60
 Ala Ala Gly Gly Leu Lys Tyr Ala Pro Arg Ala Asp Leu Ala Thr Arg
 65 70 75 80
 Gly Glu Gln Ile Ala Val Ala Glu Arg Leu Ala Arg Leu Gln Gly Met
 85 90 95
 Ser Ala Trp

<210> 46
 <211> 34
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Primer

<400> 46
 gtcagaattc atatggccac cgtggacacc tggg 34

<210> 47
 <211> 33
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Primer

<400> 47
 tgacggatcc tattaggcct gcggcaggac gag 33

<210> 48
<211> 35
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 48
atcagaattc atatggacga catcgattgg gacgc 35

<210> 49
<211> 29
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 49
cgcaggatcc cctcaatcgt ccctgctcc 29

<210> 50
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 50
gaagagaatt ccttccatca cga 23

<210> 51
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 51
ccaaacgaat tcggtcaatc ac 22

<210> 52
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 52
gcaaggatcc cagactaaaa aaacag 26

<210> 53
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 53
atcaggatcc atattattag tttaaga 27

<210> 54
<211> 663
<212> DNA
<213> Micrococcus luteus

<220>
<221> CDS
<222> (1)..(663)

<400> 54
atg act ctc ttc acc act tcc gcc acc cgc tcc cgc cgt gcc acc gcc 48
Met Thr Leu Phe Thr Thr Ser Ala Thr Arg Ser Arg Arg Ala Thr Ala
1 5 10 15
tcg atc gtc gcg ggc atg acc ctc gcc ggc gcc gcc gcc gtg ggc ttc 96
Ser Ile Val Ala Gly Met Thr Leu Ala Gly Ala Ala Ala Val Gly Phe
20 25 30
tcc gcc ccg gcc cag gcc gcc acc gtg gac acc tgg gac cgc ctc gcc 144
Ser Ala Pro Ala Gln Ala Ala Thr Val Asp Thr Trp Asp Arg Leu Ala
35 40 45
gag tgc gag tcc aac ggc acc tgg gac atc aac acc ggc aac ggc ttc 192
Glu Cys Glu Ser Asn Gly Thr Trp Asp Ile Asn Thr Gly Asn Gly Phe
50 55 60
tac ggc ggc gtg cag ttc acc ctg tcc tcc tgg cag gcc gtc ggc ggc 240
Tyr Gly Gly Val Gln Phe Thr Leu Ser Ser Trp Gln Ala Val Gly Gly
65 70 75 80
gaa ggc tac ccg cac cag gcc tcg aag gcc gag cag atc aag cgc gcc 288
Glu Gly Tyr Pro His Gln Ala Ser Lys Ala Glu Gln Ile Lys Arg Ala
85 90 95
gag atc ctc cag gac ctg cag ggc tgg ggc gcg tgg ccg ctg tgc tcg 336
Glu Ile Leu Gln Asp Leu Gln Gly Trp Gly Ala Trp Pro Leu Cys Ser
100 105 110
cag aag ctg ggc ctg acc cag gct gac gcg gac gcc ggt gac gtg gac 384
Gln Lys Leu Gly Leu Thr Gln Ala Asp Ala Asp Ala Gly Asp Val Asp

115	120	125	
gcc acc gag gcc gcc ccg gtc gcc gtg gag cgc acg gcc acc gtg cag			432
Ala Thr Glu Ala Ala Pro Val Ala Val Glu Arg Thr Ala Thr Val Gln			
130	135	140	
cgc cag tcc gcc gcg gac gag gct gcc gcc gag cag gcc gct gcc gcg			480
Arg Gln Ser Ala Ala Asp Glu Ala Ala Ala Glu Gln Ala Ala Ala Ala			
145	150	155	160
gag cag gcc gtc gtc gcc gag gcc gag acc atc gtc gtc aag tcc ggt			528
Glu Gln Ala Val Val Ala Glu Ala Glu Thr Ile Val Val Lys Ser Gly			
165	170	175	
gac tcc ctc tgg acg ctc gcc aac gag tac gag gtg gag ggt ggc tgg			576
Asp Ser Leu Trp Thr Leu Ala Asn Glu Tyr Glu Val Glu Gly Gly Trp			
180	185	190	
acc gcc ctc tac gag gcc aac aag ggc gcc gtc tcc gac gcc gcc gtg			624
Thr Ala Leu Tyr Glu Ala Asn Lys Gly Ala Val Ser Asp Ala Ala Val			
195	200	205	
atc tac gtc ggc cag gag ctc gtc ctg ccg cag gcc tga			663
Ile Tyr Val Gly Gln Glu Leu Val Leu Pro Gln Ala			
210	215	220	

<210> 55
 <211> 6
 <212> PRT
 <213> Mycobacterium tuberculosis

<400> 55
 Ala Pro Pro Ala Asp Leu
 1 5

<210> 56
 <211> 7
 <212> PRT
 <213> Mycobacterium tuberculosis

<400> 56
 Ala Pro Ala Ser Ala Asp Leu
 1 5

<210> 57
 <211> 8
 <212> PRT
 <213> Mycobacterium tuberculosis

<400> 57
 Ala Pro Pro Ala Pro Ala Glu Leu
 1 5

<210> 58
<211> 4
<212> PRT
<213> Mycobacterium tuberculosis

<400> 58
Ala Pro Pro Ala
1

<210> 59
<211> 4
<212> PRT
<213> Mycobacterium tuberculosis

<400> 59
Ala Val Asn Glu
1

<210> 60
<211> 15
<212> PRT
<213> Mycobacterium tuberculosis

<220>
<221> MOD_RES
<222> (14)
<223> Asp or Glu

<400> 60
Pro Ala Pro Leu Gly Glu Pro Leu Pro Ala Ala Pro Ala Xaa Leu
1 5 10 15

<210> 61
<211> 8
<212> PRT
<213> Mycobacterium tuberculosis

<220>
<221> MOD_RES
<222> (7)
<223> Asp or Glu

<220>
<221> MOD_RES
<222> (8)
<223> Leu or Val

<400> 61
Ala Pro Pro Ala Pro Ala Xaa Xaa
1 5

<210> 62
<211> 11
<212> PRT
<213> Mycobacterium tuberculosis

<220>
<221> MOD_RES
<222> (8)
<223> Ala or Val

<400> 62
Ala Pro Pro Val Glu Leu Ala Xaa Asn Asp Leu
1 5 10

<210> 63
<211> 14
<212> PRT
<213> Mycobacterium tuberculosis

<400> 63
Pro Ala Pro Leu Gly Glu Pro Leu Pro Ala Ala Pro Ala Asp
1 5 10

<210> 62
<211> 11
<212> PRT
<213> Mycobacterium tuberculosis

<220>
<221> MOD_RES
<222> (8)
<223> Ala or Val

<400> 62
Ala Pro Pro Val Glu Leu Ala Xaa Asn Asp Leu
1 5 10

<210> 63
<211> 14
<212> PRT
<213> Mycobacterium tuberculosis

<400> 63
Pro Ala Pro Leu Gly Glu Pro Leu Pro Ala Ala Pro Ala Asp
1 5 10